



## BHCTP Monthly Discharge Monitoring Report

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Month: March-16  
Facility: Central Treatment Plant  
Location: Bunker Hill Superfund Site  
Contract Number: W912DW-13-C-0026-P00010

Total Flow For The Month From 006 Outfall: 66,113,100 gallons

Sludge pumping to CIA sludge pond: 1,329,000 gallons

Total Flow From Kellogg Tunnel: 63,967,920 gallons

Percent of Influent Successfully Treated: 100.0%

13 sample days \* 6 parameters (Pb, Cd, Zn, Mn, TSS & pH) = 78 potential exceedances  
**78 - 0 exceedances = 78      78/78 = 100%**

### Results of Sampling Efforts:

All sampling has been performed in accordance with specifications and the Sampling and Analysis Plan. QC and QA samples have been taken as required. All sample analysis results may be found within this DMR.

Performance Evaluation (PE) sampling for the CTP continued, with five PE samples delivered to SVL for this reporting period. The PE samples were identified as CTPXX (random CTP sites). These samples consisted of preserved 500-ml trace metal samples to be analyzed for Cd, Pb and Zn. The PE acceptable quantitation range is listed on the 'QC' page of this DMR.

Trip blank and rinsate samples were also taken, with the results being reported on the 'PTM-004,RB,TB' page of this DMR.

### Highlights of Plant Maintenance and/or Plant Optimization:

**03-01-16** Performed monthly fire extinguisher inspection. All CTP fire extinguishers are fully charged and in good working condition at this time.

**03-01-16** Performed monthly pump and motor inspection. All CTP pumps and motors are in good condition at this time with the exception of the Rapid Mix gear box. Gear box vibration is increasing.

**03-01-16** 03:30 The flocculent transfer pump tripped the electrical supply breaker for a third time, activating an alarm. The auto-dialer alarm provided a flocculent flow failure alarm. The new floc transfer pump should be delivered this week.

**03-03-16** The mine owner notified us that a water treatment company will be set up at the flume area for a few days. The treatment company will be testing the water for treatment options. The treatment company was not on-site at the time of our sampling and flume cleaning. The mine owner did not provide the name of the treatment company.

**03-07-16** The water treatment company had completed their sampling and testing at the Bunker Hill Mine on Friday, March 4th. No activity was observed at the mine today during the scheduled sampling event.

**03-08-16** Operators installed and tested the new flocculent transfer pump.

**03-17-16** Chief Operator, Process Engineer, Project Manager and COR attended the monthly CTP process review meeting. Process quality, plant operations and operator work schedules were reviewed. OMER project flocculent transfer pump purchase was discussed. Possible mine flow increases were discussed. Lime usage and sample data for the month of February were reviewed. No process changes will be made at this time. KT flows will be monitored to document the effects of the recent rainfall and snowmelt.

**03-18-16** Operator received an auto-dialer call-out alarm. Mine personnel activated the mine pool pump after normal working hours. This increased flow to the CTP requires manual adjustments to the operating set points. Operators performed the manual set point and lime feed adjustments. Alarm condition was corrected and reset.

**03-22-16** Operators performed the monthly full load emergency generator run test. The emergency generator operated all CTP components for one hour as programmed with no issues or errors to report.

**03-31-16** CIA sludge pond staff gauge reading is 8.55' at this time. Sludge pond elevation report is attached.

**During this reporting period:**

- The Kellogg Tunnel discharge flow decreased by 1% from March 2015, from 64.5 mg to 64.0 mg.
- The Kellogg Tunnel zinc concentration decreased by 22% from March 2015, from an average of 81 mg/L to 63 mg/L.
- The CTP operating pH set point was increased to 8.5 from 8.3 during extended KT low-flow periods.
- The flocculent dosage remained at approximately 2 ppm to reduce process turbidity.
- The CTP sludge recycle rate remained at 400 gpm.
- CTP operators received one off-shift auto dialer call-out alarm caused by activation of the mine pool pumps.
- CTP operators performed seven pumping events from the Lined Pond.
- CTP operators performed Aeration Basin pH probe and grab sample verification twice per day.
- CTP operators observed no Kellogg Tunnel mine or mill operations.

**Lessons Learned**

No significant lessons to report for last month.

MONITORING PERIOD					
YEAR	MO	DAY	YEAR	MO	DAY
2016	3	1	2016	3	31

PARAMETER		Quantity or Loading			Quality or Concentration				FREQUENCY OF ANALYSIS	SAMPLE TYPE
		MONTHLY AVERAGE	DAILY MAXIMUM	UNITS	MINIMUM	MONTHLY AVERAGE	DAILY MAXIMUM	UNITS		
pH	Sample Measurement				6.88		7.18		Continuous	Meter
	Permit Required				6.0		10.0			
Flow Thru Treatment Plant	Sample Measurement	2.13	2.49	mgd						
	Permit Required		Daily							
Lead Total - Pb Effluent	Sample Measurement	0.04	0.05	lbs/day		0.003	0.003	mg/L	three samples/ week	Comp 24
	Permit Required	14.8	37.0			0.30	0.60	mg/L		
Zinc Total - Zn Effluent	Sample Measurement	5.26	7.75	lbs/day		0.30	0.40	mg/L	three samples/ week	Comp 24
	Permit Required	36.2	91.3			0.73	1.48	mg/L		
Cadmium - Cd Effluent	Sample Measurement	0.105	0.157	lbs/day		0.006	0.008	mg/L	three samples/ week	Comp 24
	Permit Required	2.40	6.10			0.050	0.100	mg/L		
Manganese - Mn Effluent	Sample Measurement	369.8	578	lbs/day		21.6	32.0	mg/L	three samples/ week	Comp 24
	No Permit Required					N/A	N/A	mg/L		
Total Suspended Solids - TSS	Sample Measurement	14.8	24	lbs/day		0.8	1.2	mg/L	three samples/ week	Comp 24
	Permit Required	985	1907			20	30	mg/L		

PREPARED BY: GARY FULTON

REVIEWED BY: Mark Reinsel, Ph.D., P.E.

**NPDES DISCHARGE POINT 006**  
**CENTRAL TREATMENT PLANT**  
**MONTH: Mar-16**

DAY	LEAD (Pb)		ZINC (Zn)		CADMIUM (Cd)		MANGANESE (Mn)		pH	FLOW	TSS		LOADING	
	mg/L	lbs/day	mg/L	lbs/day	mg/L	lbs/day	mg/L	lbs/day			mgd	mg/L	lbs/day	
1											1.13			
2	0.003	0.05	0.277	5.66	0.004	0.07	20.5	419	7.04	2.45	0.6	12.3	5.56	
3											2.23			
4	0.003	0.05	0.328	6.02	0.008	0.14	22.6	415	7.18	2.20	0.6	11.0	4.99	
5											2.26			
6											2.34			
7	0.003	0.05	0.323	5.84	0.005	0.09	32.0	578	7.16	2.17	1.2	21.7	9.84	
8											1.57			
9	0.003	0.04	0.330	4.85	0.006	0.08	23.9	351	7.12	1.76	1.0	14.69	6.66	
10											2.19			
11	0.003	0.05	0.310	6.21	0.007	0.15	13.2	264	6.88	2.40	1.2	24.0	10.9	
12											2.38			
13											2.45			
14	0.003	0.05	0.254	5.06	0.005	0.10	25.7	512	7.03	2.39	1.0	19.9	9.04	
15											2.48			
16	0.003	0.05	0.248	5.15	0.004	0.09	25.5	530	7.03	2.49	1.0	20.8	9.42	
17											1.58			
18	0.003	0.03	0.263	2.90	0.004	0.04	21.1	232	7.03	1.32	0.4	4.41	2.00	
19											2.43			
20											2.35			
21	0.003	0.05	0.272	5.26	0.008	0.15	16.2	313	7.17	2.32	0.8	15.5	7.02	
22											2.29			
23	0.003	0.03	0.286	3.48	0.006	0.07	24.7	301	7.03	1.46	0.6	7.31	3.32	
24											2.47			
25	0.003	0.05	0.311	6.25	0.008	0.16	16.4	330	6.91	2.41	1.2	24.1	10.9	
26											2.44			
27											2.42			
28	0.003	0.03	0.326	3.91	0.006	0.07	27.0	323	7.06	1.44	0.8	9.58	4.35	
29											1.69			
30	0.003	0.05	0.402	7.75	0.008	0.14	12.3	237	7.13	2.31	0.4	7.71	3.50	
31											2.32			
Total	0.033	0.57	3.93	68.3	0.08	1.36	281.1	4807	91.8	66.1	10.8	193.0	87.5	
Sample Events	13	13	13	13	13	13	13	13	13	31	13	13	13	
Daily Average	0.003	0.04	0.30	5.26	0.006	0.10	21.6	370	7.06	2.13	0.83	14.85	6.73	
Lab Detection Limit	<b>0.003</b>	<b>0.004</b>			<b>0.001</b>		<b>0.004</b>		<b>0.01</b>		<b>0.800</b>			

MIN	0.0025	0.03	0.25	2.90	0.0036	0.04	12.30	232	6.88	1.13	0.40	4.41	2.00
MAX	0.0025	0.05	0.40	7.75	0.0078	0.16	32.00	578	7.18	2.49	1.20	24.13	10.95

**KELLOGG TUNNEL DISCHARGE**  
**CENTRAL TREATMENT PLANT**  
**MONTH: Mar-16**  
**Data from SVL**

DAY	LEAD (Pb)		ZINC (Zn)		CADMIUM (Cd)		MANGANESE (Mn)		pH	006 FLOW		TSS	
	mg/L	lbs/day	mg/L	lbs/day	mg/L	lbs/day	mg/L	lbs/day		mgd	mg/L	lbs/day	kg/day
1									1.13				
2									2.45				
3	0.617	11.48	67	1,238	0.078	1.45	70	1,297	3.36	2.23	62	1,154	523
4									2.20				
5									2.26				
6									2.34				
7	0.626	11.31	57	1,023	0.082	1.48	66	1,198	3.31	2.17	73	1,319	598
8									1.57				
9									1.76				
10	0.642	11.72	49	896	0.085	1.55	70	1,279	3.25	2.19	71	1,296	588
11									2.40				
12									2.38				
13									2.45				
14	0.662	13.20	51	1,011	0.094	1.87	68	1,364	3.26	2.39	71	1,415	642
15									2.48				
16									2.49				
17	0.896	11.81	90	1,192	0.175	2.31	26	347	2.93	1.58	14	185	84
18									1.32				
19									2.43				
20									2.35				
21	0.680	13.15	52	1,010	0.119	2.30	79	1,524	3.10	2.32	84	1,625	737
22									2.29				
23									1.46				
24	0.650	13.40	44	909	0.115	2.37	73	1,505	3.08	2.47	82	1,690	767
25									2.41				
26									2.44				
27									2.42				
28	0.901	10.79	98	1,178	0.227	2.72	32	386	2.85	1.44	16	192	87
29									1.69				
30									2.31				
31	0.617	11.95	62	1,200	0.121	2.34	75	1,452	3.09	2.32	92	1,781	808

**PTM Effluent at Lined Storage Pond  
CENTRAL TREATMENT PLANT**

**Month: Mar-16**

DATE	LEAD mg/L	ZINC mg/L	CADMUM mg/L	pH s.u.	TSS mg/L
03/10/16	0.010	12.6	1.26	6.90	0.2
03/24/16	0.012	12.8	1.13	6.96	0.2

**RINSATE AND TRIP BLANKS  
CENTRAL TREATMENT PLANT**

**Month: Mar-16**

**Rinsate and Trip Blank samples will be taken approximately every 20 QC events, or one each per month.**

LOCATION	DATE	SAMPLE	LEAD mg/L	ZINC mg/L	CADMUM mg/L
<b>Rinsate &amp; Trip Blank</b>					
006 Treated Outfall	03-25-16	RB-03-25-16	<0.01	<0.004	<0.002
Trip Blank (D.I.water)		TB-03-25-16	<0.01	<0.004	<0.002

**Bunker Hill Central Treatment Plant**

**Daily log March 2016**

				AERATION BASIN				CLARIFIER				DISCHARGE 006				RECYCLE SG			LIME SLURRY			SLUDGE PUMP		POND PUMP		SLUDGE GUN TEST		LINED POND															
		INFLUENT KT		a.m.		p.m.		a.m.		p.m.		a.m.		p.m.		a.m.		p.m.		TURB		pH3		grab		pH3		grab		TURB	FLOW	SG	GPM	SG	%solid	Closed/Open	pump #	min	ON	OFF	10' Out	20' Out	ESTIMATED Elevation (mg)
DATE	OP	GPM	pH	SET	pH1	grab	pH1	grab	pH2	grab	pH2	grab	TURB	TEMP	pH3	grab	pH3	grab	TURB	FLOW	SG	GPM	SG	%solid	Closed/Open	pump #	min	ON	OFF	10' Out	20' Out	Elevation (mg)											
3/1	GF,SB,GC			8.5	8.6	8.5	8.3	8.3	7.9	7.8	8.2	8.1	2.20	52	7.4	7.4	7.7	7.5	0.81	1.13	1.044	400	1.063	9.8	164/10	3	80	#3	05:30	13:00	2270.0 (1.5mg)												
3/2	GF,SB,GC			8.3	8.3	8.3	8.3	8.3	8.0	8.0	8.1	8.0	1.80	48	7.6	7.4	7.6	7.5	1.60	2.45	1.040	400	1.061	9.5	160/20	3	60					2269.0 (1.0mg)											
3/3	GF,GC	1550	3.25	8.3	8.3	8.3	8.3	8.3	8.0	7.9	8.0	7.7	1.38	48	7.5	7.4	7.7	7.4	1.10	2.23	1.038	400	1.061	9.5	172/20	3	45					2269.0											
3/4	GF,GC			8.3	8.3	8.3	8.3	8.3	8.0	8.0	8.1	8.0	0.90	51	7.7	7.3	7.8	7.3	0.70	2.20	1.040	400	1.063	9.8	170/20	3	90					2269.0											
3/5	GC			8.3	8.3	8.3	8.3	8.3	8.0	8.0	8.1	7.8	1.52	49	7.7	7.6	7.9	7.5	1.13	2.26	1.041	400	1.063	9.8	160/20	3	90					2269.0											
3/6	SB			8.3	8.3	8.3	8.3	8.3	8.0	8.0	8.0	7.9	1.61	53	7.7	7.3	7.8	7.5	1.30	2.34	1.038	400	1.061	9.5	148/20	3	70					2269.00											
3/7	GF,SB	1604	3.19	8.3	8.3	8.3	8.6	8.5	8.0	7.9	7.9	7.8	1.90	53	7.7	7.3	7.8	7.3	1.10	2.17	1.041	400	1.061	9.5	152/20	3	90			13"	12"	2270.0 (1.5mg)											
3/8	GF,SB,GC			8.5	8.4	8.3	8.3	8.3	8.0	7.8	7.9	7.9	1.86	49	7.6	7.4	7.5	7.2	1.68	1.57	1.032	400	1.061	9.5	155/10	3	30	#3	05:30	13:00		2270.0											
3/9	GF,SB,GC			8.5	8.5	8.6	8.5	8.5	8.2	7.9	8.1	8.0	1.40	47	7.6	7.3	7.6	7.3	1.10	1.76	1.030	400	1.060	9.4	127/10	3	0	#3	05:30	9:00		2269.0 (1.0mg)											
3/10	GF,SB,GC			8.3	8.3	8.3	8.3	8.3	8.1	8.0	8.1	7.9	0.87	48	7.5	7.4	7.7	7.4	0.80	2.19	1.044	400	1.061	9.5	134/20	3	90					2268.5 (0.75mg)											
3/11	GC			8.3	8.3	8.3	8.3	8.3	8.1	7.9	8.2	7.9	0.91	48	7.7	7.7	7.5	0.65	2.40	1.040	400	1.062	9.7	140/22	3	80					2268.5												
3/12	GC			8.3	8.3	8.4	8.3	8.3	8.1	8.0	8.2	8.0	0.90	48	7.8	7.7	7.8	7.7	0.76	2.38	1.040	400	1.062	9.7	151/22	3	80					2268.5											
3/13	SB			8.3	8.4	8.4	8.3	8.3	8.1	8.1	8.4	8.0	0.89	51	7.7	7.3	8.0	7.4	0.78	2.45	1.042	400	1.063	9.8	148/22	3	90					2268.5											
3/14	SB	1701	3.10	8.3	8.3	8.4	8.3	8.3	8.3	8.1	8.4	8.0	1.23	52	7.9	7.3	7.9	7.3	0.85	2.39	1.039	400	1.063	9.8	134/22	3	90					2269.0 (1.0mg)											
3/15	SB,GC			8.3	8.3	8.3	8.3	8.4	8.3	7.9	8.2	8.0	1.35	47	7.9	7.3	7.6	7.3	1.18	2.48	1.038	400	1.067	10.4	135/22	3	60					2269.0											
3/16	SB,GC	1840		8.3	8.3	8.2	8.6	8.6	8.4	8.0	8.2	8.0	1.05	47	7.9	7.4	7.5	7.3	0.98	2.49	1.039	400	1.064	10.0	140/22	3	90					2269.0											
3/17	GF,SB,GC	880	2.85	8.5	8.5	8.5	8.5	8.5	8.2	7.9	8.4	8.0	1.01	47	7.5	7.4	7.5	7.4	0.73	1.58	1.036	400	1.065	10.1	117/10	3	0					2269.0											
3/18	GF,GC			8.5	8.5	8.4	8.5	8.5	8.3	8.0	8.3	8.3	0.95	44	7.3	7.5	7.3	7.3	0.91	1.32	1.036	400	1.064	10.0	116/10	3	60	#3	06:46	13:00		2269.5 (1.25mg)											
3/19	GC			8.3	8.4	8.4	8.3	8.3	8.4	8.1	8.3	8.0	0.70	44	7.6	7.7	7.6	7.6	0.56	2.43	1.042	400	1.063	9.8	113/20	3	90					2269.0 (1.0mg)											
3/20	SB			8.3	8.3	8.4	8.3	8.3	8.2	8.1	8.0	8.2	0.64	48	7.6	7.4	7.5	7.3	0.51	2.35	1.041	400	1.064	10.0	119/20	3	90					2269.0											
3/21	GF,SB	1632	3.04	8.3	8.3	8.4	8.3	8.2	8.1	8.0	8.1	7.9	0.90	52	7.5	7.4	7.5	7.3	0.60	2.32	1.042	400	1.063	9.8	115/20	3	90					2269.0											
3/22	GF,SB,GC			8.3	8.4	8.3	8.6	8.6	8.1	7.8	8.1	7.9	0.81	48	7.5	7.4	7.6	7.4	0.72	2.29	1.046	400	1.063	9.8	112/20	3	90					2269.0											
3/23	GF,SB,GC			8.5	8.5	8.5	8.3	8.3	8.2	8.0	8.1	8.0	1.10	47	7.4	7.3	7.4	7.3	0.69	1.46	1.031	400	1.065	10.1	114/12	3	60	#3	06:46	13:00		2269.5 (1.25mg)											
3/24	GF,SB,GC	1660	3.																																								

**CENTRAL TREATMENT PLANT****MISCELLANEOUS FLOWS**Month : **Mar-16**

Date	<b>KT Flow Meter Reading</b>
2/29/2016	0
3/31/2016	63,967,920
<b>Total</b>	<b>63,967,920</b>

Date	<b>006 Flow Meter Reading</b>
2/29/2016	0
3/31/2016	66,113,100
<b>Total</b>	<b>66,113,100</b>

<b>Sweeny Pump Station Reading</b>				
Date	#1 Pump	620 gpm	#2 Pump	500 gpm
2/29/2016	170.0	Hours	785.0	Hours
3/31/2016	170.0	Hours	785.0	Hours
Total Hours	0.0	Hours	0.0	Hours
Total Flow for 004/Sweeny For The Month =	0		Gallons	

<b>PTM Discharge Flow</b>	
Date	Flow (gpm)
03/10/16	20.0
03/24/16	20.0

Date	<b>Lined Storage Pond Water Level</b>			
2/29/2016	1,500,000	gal	Elev. =	2270.0
3/31/2016	750,000	gal	Elev. =	2268.5

KELLOGG TUNNEL ANNUAL DISCHARGE FLOWS 2000-2009										
	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
<b>Jan.</b>	61,000,000	61,677,510	54,606,100	53,066,890	52,223,080	53,150,000	56,050,900	56,281,000	53,465,820	50,936,960
<b>Feb.</b>	57,600,000	45,584,000	52,840,000	46,493,470	48,306,920	49,860,000	51,188,000	50,511,300	49,282,209	48,146,111
<b>March</b>	60,730,000	57,740,360	50,452,060	60,162,290	59,852,720	58,073,000	56,332,830	65,443,650	54,578,130	61,712,540
<b>April</b>	68,680,000	54,846,000	65,583,230	63,335,350	50,715,310	53,775,350	72,039,280	66,636,500	61,690,530	63,055,350
<b>May</b>	<b>97,719,900</b>	57,501,901	76,082,410	63,335,350	53,245,000	54,181,650	72,027,000	63,203,308	86,680,760	70,233,580
<b>June</b>	69,800,000	55,835,590	67,299,960	59,532,434	50,451,170	51,750,000	68,385,600	57,981,410	82,622,590	64,623,180
<b>July</b>	63,698,850	53,652,330	64,820,120	66,252,746	56,538,980	55,255,000	64,054,000	58,282,900	66,324,500	61,535,000
<b>Aug.</b>	66,707,120	45,289,000	58,212,940	62,074,750	52,002,140	49,970,000	64,621,000	55,335,900	65,168,620	56,446,670
<b>Sept.</b>	55,797,530	50,276,020	60,140,460	43,789,000	49,208,020	49,987,000	54,515,270	50,471,870	61,074,020	57,006,430
<b>Oct.</b>	60,424,720	50,660,840	54,485,871	52,869,290	59,601,690	52,807,000	57,610,030	50,086,330	58,666,300	55,830,000
<b>Nov.</b>	53,408,660	50,660,840	51,072,259	47,600,000	51,948,000	50,722,600	55,191,700	50,779,040	52,041,780	54,956,800
<b>Dec.</b>	56,414,870	53,464,780	56,034,000	56,413,080	56,770,000	54,904,400	60,486,900	53,716,210	55,727,260	54,542,700
<b>Totals</b>	771,981,650	637,189,171	711,629,410	674,924,650	640,863,030	634,436,000	732,502,510	678,729,418	747,322,519	699,025,321

KELLOGG TUNNEL ANNUAL DISCHARGE FLOWS 2010-2019										
	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
<b>Jan.</b>	55,503,180	61,797,170	58,434,610	<b>61,855,400</b>	57,478,450	58,440,540	52,196,730			
<b>Feb.</b>	50,819,910	54,556,227	57,763,170	59,383,290	54,607,950	<b>59,767,470</b>	53,694,400			
<b>March</b>	54,691,420	61,373,630	<b>67,236,650</b>	66,264,780	65,396,350	64,468,230	63,967,920			
<b>April</b>	56,255,340	65,687,340	<b>81,233,630</b>	69,619,100	65,618,770	63,056,840				
<b>May</b>	58,825,640	84,365,390	<b>86,826,340</b>	71,496,380	80,598,590	61,898,200				
<b>June</b>	56,770,200	79,985,540	<b>83,440,990</b>	64,663,900	65,623,330	56,368,540				
<b>July</b>	56,727,510	<b>79,346,330</b>	74,315,690	62,844,790	63,425,030	55,655,000				
<b>Aug.</b>	56,239,370	<b>70,377,570</b>	68,986,900	58,459,380	61,486,270	55,316,100				
<b>Sept.</b>	54,109,980	60,404,280	<b>62,270,300</b>	58,097,500	56,279,590	53,890,000				
<b>Oct.</b>	55,480,200	<b>62,403,480</b>	59,991,850	58,325,780	60,659,850	52,082,800				
<b>Nov.</b>	54,856,880	<b>58,430,700</b>	57,184,220	56,215,000	55,065,100	49,812,540				
<b>Dec.</b>	54,607,330	58,617,700	<b>61,750,390</b>	56,932,530	59,770,540	51,521,900				
<b>Totals</b>	664,886,960	797,345,357	<b>819,434,740</b>	<b>744,157,830</b>	<b>746,009,820</b>	<b>682,278,160</b>	<b>169,859,050</b>	0	0	0

Yellow indicates record monthly flow as well as record annual flow

## KELLOGG TUNNEL ZINC DATA

	Concentration (mg/L)												
<u>Month</u>	<u>2004</u>	<u>2005</u>	<u>2006</u>	<u>2007</u>	<u>2008</u>	<u>2009</u>	<u>2010</u>	<u>2011</u>	<u>2012</u>	<u>2013</u>	<u>2014</u>	<u>2015</u>	<u>2016</u>
Jan.		86	81	79	63	70	61	72	57	68	41	46	50
Feb.		86	91	96	55	72	57	95	58	68	41	68	52
March		94	116	86	65	68	53	86	58	69	58	81	63
April		98	121	140	85	80	50	137	176	86	107	92	
May		105	231	179	318	136	57	377	215	150	177	87	
June		107	182	118	271	143	68	347	164	106	131	78	
July		90	144	111	198	117	75	181	136	87	87	75	
Aug.		87	112	92	132	94	79	130	110	86	76	66	
Sept.		84	107	80	107	76	81	132	107	75	66	63	
Oct.	59	81	100	88	99	75	70	86	70	67	63	54	
Nov.	66	79	88	88	104	63	57	95	71	70	55	44	
Dec.	67	62	78	65	76	59	61	88	69	54	49	55	
<b>average</b>	<b>64</b>	<b>88</b>	<b>121</b>	<b>102</b>	<b>131</b>	<b>88</b>	<b>64</b>	<b>152</b>	<b>108</b>	<b>82</b>	<b>79</b>	<b>67</b>	
<b>lime usage (tons/day)</b>	<b>2.59</b>	<b>3.23</b>	<b>2.76</b>	<b>4.78</b>	<b>3.24</b>	<b>2.16</b>	<b>4.31</b>	<b>3.93</b>	<b>2.46</b>	<b>2.70</b>	<b>1.99</b>		
<b>Zinc Conc. Increase/Decrease</b>		<b>37%</b>	<b>-16%</b>	<b>29%</b>	<b>-33%</b>	<b>-27%</b>	<b>138%</b>	<b>-29%</b>	<b>-24%</b>	<b>-4%</b>	<b>-15%</b>		
<b>Lime Usage Increase/Decrease</b>		<b>25%</b>	<b>-15%</b>	<b>73%</b>	<b>-32%</b>	<b>-33%</b>	<b>100%</b>	<b>-9%</b>	<b>-37%</b>	<b>10%</b>	<b>-26%</b>		

<b>Bunker Hill Superfund Site</b>							
<b>Kellogg, Idaho</b>							
<b>Central Treatment Plant Review</b>							
Month: Mar-16							
SAMPLE	DATE	PARAMETER	VALUE	QC/dup	UNITS	PRECISION	MATRIX SPIKE DATA
LOCATION			RESULTS			% RPD	% RECOVERY
006/CTP Outfall	03/02/16	Cadmium	0.004	0.004	mg/L	2.8%	99%
		Lead	0.003	0.003	mg/L	0.0%	92%
Lab Duplicate		Manganese	20.5	20.7	mg/L	-1.0%	119%
		Zinc	0.277	0.280	mg/L	-1.1%	94%
		pH	7.04	7.06	s.u.	-0.3%	
		TSS	0.6	0.4	mg/L	40.0%	
Kellogg Tunnel	03/03/16	Cadmium	0.054	0.053	mg/L	1.3%	96%
		Lead	0.337	0.333	mg/L	1.2%	94%
Lab Duplicate		Manganese	0.004	0.003	mg/L	33.3%	96%
		Zinc	0.833	0.826	mg/L	0.8%	94%
		pH			s.u.		
		TSS			mg/L		
Performance Evaluation Sample	03/03/16	Cadmium	0.054	0.050	mg/L	6.9%	
(CTPXX-03-03-16)		Lead	0.337	0.300	mg/L	11.6%	
		Zinc	0.833	0.730	mg/L	13.2%	
					mg/L		
006/CTP Outfall	03/04/16	Cadmium	0.008	0.008	mg/L	-3.8%	102%
		Lead	0.003	0.003	mg/L	0.0%	95%
Lab Duplicate		Manganese	22.6	22.8	mg/L	-0.9%	82%
		Zinc	0.328	0.334	mg/L	-1.8%	97%
		pH	7.18	7.19	s.u.	-0.1%	
		TSS	0.6	0.6	mg/L	0.0%	
006/CTP Outfall	03/07/16	Cadmium	0.005	0.005	mg/L	2.0%	100%
		Lead	0.003	0.003	mg/L	0.0%	93%
Lab Duplicate		Manganese	32.0	32.3	mg/L	-0.9%	
		Zinc	0.323	0.322	mg/L	0.3%	94%
		pH	7.16	7.14	s.u.	0.3%	
		TSS	1.2	1.2	mg/L	0.0%	
006/CTP Outfall	03/09/16	Cadmium	0.006	0.005	mg/L	1.8%	102%
		Lead	0.003	0.003	mg/L	0.0%	95%
Lab Duplicate		Manganese	23.9	23.9	mg/L	0.0%	114%
		Zinc	0.330	0.329	mg/L	0.3%	97%
		pH	7.12	7.13	s.u.	-0.1%	
		TSS	1.0	1.0	mg/L	0.0%	
Performance Evaluation Sample	03/10/16	Cadmium	0.053	0.050	mg/L	5.8%	
(CTPXX-03-10-16)		Lead	0.331	0.300	mg/L	9.8%	
		Zinc	0.826	0.730	mg/L	12.3%	
					mg/L		
CTPXX-03-10-16	03/10/16	Cadmium	0.053	0.052	mg/L	1.9%	95%
		Lead	0.331	0.325	mg/L	1.8%	93%
Lab Duplicate		Manganese	0.002	0.002	mg/L	0.0%	100%
		Zinc	0.826	0.814	mg/L	1.5%	93%
PTM Discharge	03/10/16	Cadmium	1.25	1.26	mg/L	-0.8%	
		Lead	0.010	0.010	mg/L	6.1%	
QC Sample		Manganese			mg/L		

SAMPLE	DATE	PARAMETER	VALUE	QC/dup	UNITS	PRECISION	MATRIX SPIKE DATA
LOCATION			RESULTS			% RPD	% RECOVERY
		Zinc	12.4	12.6	mg/L	-1.6%	
		pH	7.13	6.90	s.u.	3.3%	
		TSS	0.0	0.2	mg/L	0.0%	
006/CTP Outfall	03/11/16	Cadmium	0.007	0.008	mg/L	-2.7%	99%
		Lead	0.003	0.003	mg/L	0.0%	95%
Lab Duplicate		Manganese	13.2	12.9	mg/L	2.3%	
		Zinc	0.310	0.308	mg/L	0.6%	96%
		pH	6.88	6.84	s.u.	0.6%	
		TSS	1.2	1.2	mg/L	0.0%	
006/CTP Outfall	03/14/16	Cadmium	0.005	0.005	mg/L	2.1%	101%
		Lead	0.003	0.003	mg/L	0.0%	94%
Lab Duplicate		Manganese	25.7	25.9	mg/L	-0.8%	109%
		Zinc	0.254	0.255	mg/L	-0.4%	97%
		pH	7.03	7.03	s.u.	0.0%	
		TSS	1.0	1.0	mg/L	0.0%	
Kellogg Tunnel	03/14/16	Cadmium	0.094	0.093	mg/L	0.4%	
		Lead	0.662	0.662	mg/L	0.0%	
QC Sample		Manganese	68.4	67.7	mg/L	1.0%	
		Zinc	50.7	53.5	mg/L	-5.4%	
		pH	3.26	3.28	s.u.	-0.6%	
		TSS	71.0	72.0	mg/L	-1.4%	
006/CTP Outfall	03/16/16	Cadmium	0.004	0.004	mg/L	-2.3%	101%
		Lead	0.003	0.003	mg/L	0.0%	94%
Lab Duplicate		Manganese	25.5	25.7	mg/L	-0.8%	
		Zinc	0.248	0.254	mg/L	-2.4%	98%
		pH	7.03	7.01	s.u.	0.3%	
		TSS	1.0	0.6	mg/L	50.0%	
Performance Evaluation Sample	03/17/16	Cadmium	0.052	0.050	mg/L	3.5%	
(CTPXX-03-17-16)		Lead	0.320	0.300	mg/L	6.5%	
CTPXX-03-17-16	03/17/16	Zinc	0.828	0.730	mg/L	12.6%	
					mg/L		
		Cadmium	0.052	0.052	mg/L	0.4%	97%
		Lead	0.320	0.320	mg/L	0.0%	97%
Lab Duplicate		Manganese	0.002	0.003	mg/L	-12.2%	99%
		Zinc	0.828	0.831	mg/L	-0.4%	96%
006/CTP Outfall	03/18/16	Cadmium	0.004	0.004	mg/L	-7.2%	99%
		Lead	0.003	0.003	mg/L	0.0%	93%
Lab Duplicate		Manganese	21.1	20.4	mg/L	3.4%	
		Zinc	0.263	0.270	mg/L	-2.6%	96%
		pH	7.03	6.98	s.u.	0.7%	
		TSS	0.4	0.4	mg/L	0.0%	
006/CTP Outfall	03/21/16	Cadmium	0.008	0.007	mg/L	2.7%	102%
		Lead	0.003	0.003	mg/L	0.0%	99%
Lab Duplicate		Manganese	16.2	16.1	mg/L	0.6%	107%
		Zinc	0.272	0.271	mg/L	0.4%	97%
		pH	7.17	7.13	s.u.	0.6%	
		TSS	0.8	0.8	mg/L	0.0%	
Kellogg Tunnel	03/21/16	Cadmium	0.119	0.119	mg/L	0.0%	112%
		Lead	0.680	0.680	mg/L	0.0%	103%
Lab Duplicate		Manganese	78.8	78.9	mg/L	-0.1%	

SAMPLE	DATE	PARAMETER	VALUE	QC/dup	UNITS	PRECISION	MATRIX SPIKE DATA
LOCATION			RESULTS			% RPD	% RECOVERY
		Zinc	52.2	52.5	mg/L	-0.6%	
		pH			s.u.		
		TSS			mg/L		
006/CTP Outfall	03/23/16	Cadmium	0.006	0.006	mg/L	0.0%	108%
		Lead	0.003	0.003	mg/L	0.0%	100%
Lab Duplicate		Manganese	24.7	24.8	mg/L	-0.4%	
		Zinc	0.286	0.287	mg/L	-0.3%	100%
		pH	7.03	6.93	s.u.	1.4%	
		TSS	0.6	0.6	mg/L	0.0%	
Performance Evaluation Sample (CTPXX-03-24-16)	03/24/16	Cadmium	0.057	0.050	mg/L	13.4%	
		Lead	0.344	0.300	mg/L	13.7%	
		Zinc	0.878	0.730	mg/L	18.4%	
					mg/L		
TB-03-25-16	03/25/16	Cadmium	0.001	0.001	mg/L	0.0%	102%
		Lead	0.003	0.003	mg/L	0.0%	100%
Lab Duplicate		Manganese	0.002	0.002	mg/L	0.0%	105%
		Zinc	0.004	0.004	mg/L	0.0%	100%
006/CTP Outfall	03/25/16	Cadmium	0.008	0.008	mg/L	-3.9%	
		Lead	0.003	0.003	mg/L	0.0%	
QC Sample		Manganese	16.4	16.5	mg/L	-0.6%	
		Zinc	0.311	0.310	mg/L	0.3%	
		pH	6.91	6.92	s.u.	-0.1%	
		TSS	0.6	0.6	mg/L	0.0%	
006/CTP Outfall	03/25/16	Cadmium	0.008	0.008	mg/L	0.0%	96%
		Lead	0.003	0.003	mg/L	0.0%	89%
Lab Duplicate		Manganese	16.4	16.1	mg/L	1.8%	
		Zinc	0.311	0.307	mg/L	1.3%	90%
		pH	6.91	6.82	s.u.	1.3%	
		TSS	0.6	0.6	mg/L	0.0%	
Kellogg Tunnel	03/28/16	Cadmium	0.227	0.230	mg/L	-1.3%	105%
		Lead	0.901	0.920	mg/L	-2.1%	100%
Lab Duplicate		Manganese	32.3	32.9	mg/L	-1.8%	120%
		Zinc	98.3	99.9	mg/L	-1.6%	
		pH			s.u.		
		TSS			mg/L		
006/CTP Outfall	03/28/16	Cadmium	0.006	0.006	mg/L	-1.6%	105%
		Lead	0.003	0.003	mg/L	0.0%	97%
Lab Duplicate		Manganese	27.0	27.3	mg/L	-1.1%	
		Zinc	0.326	0.324	mg/L	0.6%	97%
		pH	7.06	6.92	s.u.	2.0%	
		TSS	0.8	0.8	mg/L	0.0%	
006/CTP Outfall	03/30/16	Cadmium	0.008	0.007	mg/L	2.7%	101%
		Lead	0.003	0.003	mg/L	0.0%	94%
Lab Duplicate		Manganese	12.3	12.3	mg/L	0.0%	109%
		Zinc	0.402	0.404	mg/L	-0.5%	96%
		pH	7.13	7.00	s.u.	1.8%	
		TSS	0.4	0.4	mg/L	0.0%	
Performance Evaluation Sample	03/31/16	Cadmium	0.054	0.050	mg/L	8.4%	
		Lead	0.334	0.300	mg/L	10.7%	
		Zinc	0.847	0.730	mg/L	14.8%	



<b>Bunker Hill Superfund Site</b>							
<b>Kellogg, Idaho</b>							
<b>Central Treatment Plant Review</b>							
		<b>Month: Mar-16</b>					
SAMPLE	DATE	PARAMETER	SPIKE	DUPLICATE	SPIKE	PRECISION	
LOCATION			ADDED	RESULT	RESULT	% RPD	COMMENTS
006/CTP Outfall	03/02/16	Cadmium	1.00	0.988	0.996	0.7%	
<b>MS/MSD</b>		Lead	1.00	0.909	0.919	1.1%	
		Manganese	1.00	21.3	21.7	1.5%	Sample conc. >> spike level
		Zinc	1.00	1.19	1.21	1.8%	
Kellogg Tunnel	03/03/16	Cadmium	1.00	1.01	1.01	0.2%	
<b>MS/MSD</b>		Lead	1.00	1.27	1.28	0.5%	
		Manganese	1.00	0.960	0.966	0.7%	Sample conc. >> spike level
		Zinc	1.00	1.77	1.77	0.3%	
006/CTP Outfall	03/04/16	Cadmium	1.00	1.00	1.02	2.1%	
<b>MS/MSD</b>		Lead	1.00	0.925	0.949	2.6%	
		Manganese	1.00	23.1	23.4	1.2%	Sample conc. >> spike level
		Zinc	1.00	1.26	1.30	3.1%	
006/CTP Outfall	03/07/16	Cadmium	1.00	1.00	1.01	0.6%	
<b>MS/MSD</b>		Lead	1.00	0.918	0.927	1.0%	
		Manganese	1.00	32.8	32.7	0.3%	Sample conc. >> spike level
		Zinc	1.00	1.24	1.26	1.1%	
006/CTP Outfall	03/09/16	Cadmium	1.00	1.02	1.03	0.6%	
<b>MS/MSD</b>		Lead	1.00	0.949	0.951	0.2%	
		Manganese	1.00	24.6	25.0	1.6%	Sample conc. >> spike level
		Zinc	1.00	1.30	1.30	0.1%	
PE Sample	03/10/16	Cadmium	1.00	0.997	1.00	0.2%	
<b>MS/MSD</b>		Lead	1.00	1.25	1.26	0.4%	
CTPXX-03-10-16		Manganese	1.00	0.996	0.999	0.4%	Sample conc. >> spike level
		Zinc	1.00	1.75	1.75	0.3%	
006/CTP Outfall	03/11/16	Cadmium	1.00	1.01	1.00	0.9%	
<b>MS/MSD</b>		Lead	1.00	0.956	0.947	0.9%	
		Manganese	1.00	13.9	13.9	0.3%	Sample conc. >> spike level
		Zinc	1.00	1.28	1.27	1.0%	
006/CTP Outfall	03/14/16	Cadmium	1.00	1.01	1.01	0.2%	
<b>MS/MSD</b>		Lead	1.00	0.947	0.939	0.8%	
		Manganese	1.00	27.1	26.8	1.2%	Sample conc. >> spike level
		Zinc	1.00	1.24	1.22	1.4%	
Kellogg Tunnel	03/14/16	Cadmium	1.00	1.10	1.09	1.0%	
<b>MS/MSD</b>		Lead	1.00	1.63	1.61	1.2%	
		Manganese	1.00	68.5	67.7	1.1%	Sample conc. >> spike level
		Zinc	1.00	52.0	52.5	1.1%	
006/CTP Outfall	03/16/16	Cadmium	1.00	1.02	1.01	1.4%	
<b>MS/MSD</b>		Lead	1.00	0.947	0.942	0.5%	
		Manganese	1.00	28.0	27.1	3.3%	Sample conc. >> spike level
		Zinc	1.00	1.24	1.23	0.6%	
PE Sample	03/17/16	Cadmium	1.00	1.03	1.02	0.5%	
<b>MS/MSD</b>		Lead	1.00	1.29	1.29	0.1%	
CTPXX-03-17-16		Manganese	1.00	1.00	0.989	1.3%	Sample conc. >> spike level

		Zinc	1.00	1.80	1.79	0.5%		
006/CTP Outfall	03/18/16	Cadmium	1.00	1.01	0.995	1.3%		
<b>MS/MSD</b>		Lead	1.00	0.936	0.929	0.7%		
		Manganese	1.00	21.4	21.3	0.4%	Sample conc. >> spike level	
		Zinc	1.00	1.22	1.22	0.1%		
006/CTP Outfall	03/21/16	Cadmium	1.00	1.03	1.03	0.2%		
<b>MS/MSD</b>		Lead	1.00	0.982	0.990	0.1%		
		Manganese	1.00	17.1	17.3	1.2%	Sample conc. >> spike level	
		Zinc	1.00	1.24	1.24	0.5%		
Kellogg Tunnel	03/21/16	Cadmium	1.00	1.24	1.24	0.2%		
<b>MS/MSD</b>		Lead	1.00	1.71	1.71	0.5%		
		Manganese	1.00	78.4	78.7	0.4%	Sample conc. >> spike level	
		Zinc	1.00	54.5	52.5	3.8%		
006/CTP Outfall	03/23/16	Cadmium	1.00	1.11	1.08	2.5%		
<b>MS/MSD</b>		Lead	1.00	1.03	0.999	2.8%		
		Manganese	1.00	25.6	25.3	1.2%	Sample conc. >> spike level	
		Zinc	1.00	1.33	1.29	2.8%		
006/CTP Outfall	03/25/16	Cadmium	1.00	0.982	0.971	1.1%		
<b>MS/MSD</b>		Lead	1.00	0.903	0.894	1.0%		
		Manganese	1.00	17.3	17.1	0.9%	Sample conc. >> spike level	
		Zinc	1.00	1.23	1.21	1.3%		
TB-03-25-16	03/25/16	Cadmium	1.00	1.04	1.02	1.6%		
<b>MS/MSD</b>		Lead	1.00	1.02	1.00	1.8%		
		Manganese	1.00	1.06	1.05	1.0%	Sample conc. >> spike level	
		Zinc	1.00	1.02	1.00	1.8%		
Kellogg Tunnel	03/28/16	Cadmium	1.00	1.31	1.28	1.9%		
<b>MS/MSD</b>		Lead	1.00	1.93	1.90	1.5%		
		Manganese	1.00	33.6	33.5	0.3%	Sample conc. >> spike level	
		Zinc	1.00	101	101	0.1%		
006/CTP Outfall	03/28/16	Cadmium	1.00	1.07	1.06	0.8%		
<b>MS/MSD</b>		Lead	1.00	0.967	0.967	0.0%		
		Manganese	1.00	28.2	28.3	0.5%	Sample conc. >> spike level	
		Zinc	1.00	1.30	1.30	0.3%		
006/CTP Outfall	03/30/16	Cadmium	1.00	1.00	1.01	1.1%		
<b>MS/MSD</b>		Lead	1.00	0.937	0.942	0.5%		
		Manganese	1.00	13.3	13.4	0.8%	Sample conc. >> spike level	
		Zinc	1.00	1.35	1.36	0.6%		
PE Sample	03/31/16	Cadmium	1.00	1.02	1.02	0.7%		
<b>MS/MSD</b>		Lead	1.00	1.28	1.29	0.9%		
CTPXX-03-31-16		Manganese	1.00	1.02	1.03	1.1%	Sample conc. >> spike level	
		Zinc	1.00	1.78	1.80	0.8%		

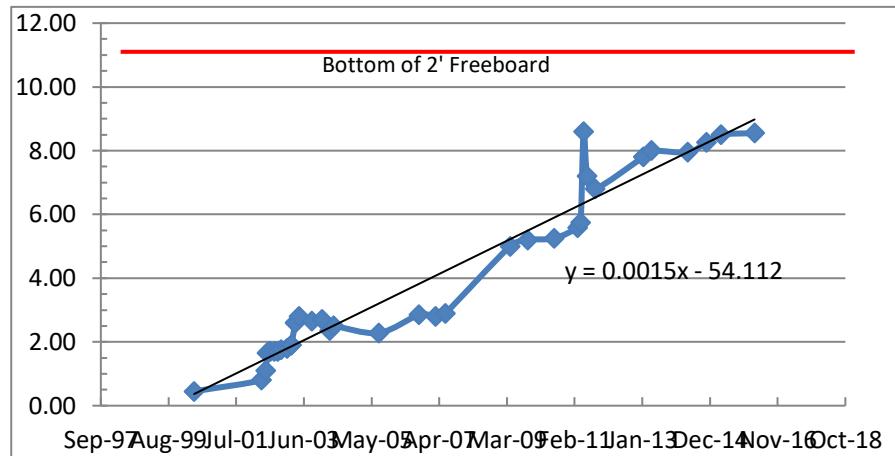
## **USACE PRIME CONTRACTOR**

# **Monthly Record of Work-Related Injuries/Illnesses & Exposure**

No accidents reported

**Bunker Hill Sludge Pond**  
**Sludge Staff Gage Reading Summary**

Date	Sludge Level (feet)	Estimated Sludge Elevation	Estimated Remaining Height to Road (feet)
05/19/00	0.45		
04/16/02	0.80		
05/28/02	1.10		
06/13/02	1.65		
07/01/02	1.70		
07/16/02	1.70		
08/27/02	1.70		
10/01/02	1.70		
11/06/02	1.75		
01/06/03	1.80		
02/19/03	1.90		
02/19/03	1.90		
03/31/03	2.60		
04/01/03	2.60		
05/07/03	2.80		
09/19/03	2.65		
01/01/04	2.70		
03/22/04	2.36		
04/29/04	2.50	2311	11.0
08/09/05	2.28	2310.8	11.2
09/30/06	2.85	2311.4	10.7
03/20/07	2.80	2311.3	10.7
6/30/2007	2.90	2311.4	10.6
4/30/2009	5.00	2313.5	8.50
10/31/2009	5.20	2313.7	8.30
7/31/2010	5.25	2313.8	8.25
3/31/2011	5.58	2314.1	7.92
4/30/2011	5.75	2314.3	7.75
5/30/2011	8.60	2317.1	4.90
7/5/2011	7.20	2315.7	6.30
9/26/2011	6.80	2315.3	6.70
2/4/2013	7.80	2316.3	5.70
4/30/2013	8.00	2316.5	5.50
5/12/2014	7.95	2316.5	5.55
11/20/2014	8.26	2316.8	5.24
4/20/2015	8.50	2317.0	5.00
4/1/2016	8.55	2317.1	4.95



**5796      8.10      Total Change, Days and Feet**

Note 3      0.51      Average Rise Per Year (Includes Lined Pond Cleanout), feet  
               5.0      Estimated average remaining total height to perimeter road, feet  
               2.0      Assumed desired end-of-life freeboard, feet  
               3.0      Estimated available storage height, feet

**5.9      Estimated Remaining Life (years)**

3/5/2021

Notes:

- 1) Pond perimeter road centerline elevation = 2322.0 feet from CIA as-builts Drawing C-28
- 2) Pond area is approximately 220,000 square feet (not used in calculations)
- 3) Average Rise Per Year conservatively includes Lined Pond muck because some portion would have made CTP sludge if it had not precipitated

## CTP Mine Water Line Open Channel Inspection Form

**Note:** This form should be utilized weekly during the regular channel cleanout.  
Results will be include with the Daily Quality Control Report and monthly DMR.

Date: March 03, 2016

Inspected By:

Gary Coast, Gary Fulton

Item Inspected	Condition	Comments	
Channel Sections and Joints	<b>Good</b> / Poor	Check for cracks	Ok
Channel Inlet Connection @ KT	<b>Good</b> / Poor	Check for cracks	Ok
Channel Outlet/Pipeline Inlet	<b>Good</b> / Poor	Check for cracks	Ok
Channel Bottom (during low flows)	<b>Good</b> / Poor		Ok
Bottom Joints (during low flows)	<b>Good</b> / Poor		Ok
Trash Rack Assembly Rail Units	<b>Good</b> / Poor	Check for corrosion and bolt tightness	Ok
Trash Racks	<b>Good</b> / Poor	Removed debris from trash racks	
Parshall Flume	<b>Good</b> / Poor	Check fiberglass and joint connections	Ok

General Comments:

Bunker mine has one pump operating at this time.

The Kellogg Tunnel flow at this time is 2.24 mgd (1550 gpm), pH at this time is 3.25

All flume components are in good shape at this time with the exception of the flume staff gauge.

Alternate hand held staff gauges will be utilized to verify flume staff gauge and flow meter readings.

Ultrasonic flow meter calibration was correct.

**Operators observed no mine activity at this time.**

## CTP Mine Water Line Open Channel Inspection Form

**Note:** This form should be utilized weekly during the regular channel cleanout.  
Results will be include with the Daily Quality Control Report and monthly DMR.

Date: March 10, 2016

Inspected By:

Gary Coast, Steve Brunner

Item Inspected	Condition	Comments	
Channel Sections and Joints	<b>Good</b> / Poor	Check for cracks	Ok
Channel Inlet Connection @ KT	<b>Good</b> / Poor	Check for cracks	Ok
Channel Outlet/Pipeline Inlet	<b>Good</b> / Poor	Check for cracks	Ok
Channel Bottom (during low flows)	<b>Good</b> / Poor		Ok
Bottom Joints (during low flows)	<b>Good</b> / Poor		Ok
Trash Rack Assembly Rail Units	<b>Good</b> / Poor	Check for corrosion and bolt tightness	Ok
Trash Racks	<b>Good</b> / Poor	Removed debris from trash racks	
Parshall Flume	<b>Good</b> / Poor	Check fiberglass and joint connections	Ok

General Comments:

Bunker mine has one pump operating at this time.

The Kellogg Tunnel flow at this time is 2.34 mgd (1620 gpm), pH at this time is 3.08

All flume components are in good shape at this time with the exception of the flume staff gauge.

Alternate hand held staff gauges will be utilized to verify flume staff gauge and flow meter readings.

Ultrasonic flow meter calibration was correct.

**Operators observed no mine activity at this time.**

## CTP Mine Water Line Open Channel Inspection Form

**Note:** This form should be utilized weekly during the regular channel cleanout.  
Results will be include with the Daily Quality Control Report and monthly DMR.

Date: March 17, 2016

Inspected By:

Steve Brunner, Gary Coast, Gary Fulton

Item Inspected	Condition	Comments	
Channel Sections and Joints	Good / Poor	Check for cracks	Ok
Channel Inlet Connection @ KT	Good / Poor	Check for cracks	Ok
Channel Outlet/Pipeline Inlet	Good / Poor	Check for cracks	Ok
Channel Bottom (during low flows)	Good / Poor		Ok
Bottom Joints (during low flows)	Good / Poor		Ok
Trash Rack Assembly Rail Units	Good / Poor	Check for corrosion and bolt tightness	Ok
Trash Racks	Good / Poor	Removed debris from trash racks	
Parshall Flume	Good / Poor	Check fiberglass and joint connections	Ok

General Comments:

Bunker mine has no pumps running at this time.

The Kellogg Tunnel flow at this time is 1.27 mgd (880 gpm), pH at this time is 2.85

All flume components are in good shape at this time with the exception of the flume staff gauge.

Alternate hand held staff gauges will be utilized to verify flume staff gauge and flow meter readings.

Ultrasonic flow meter calibration was correct.

**Operators observed no mine activity at this time.**

## CTP Mine Water Line Open Channel Inspection Form

**Note:** This form should be utilized weekly during the regular channel cleanout.  
Results will be include with the Daily Quality Control Report and monthly DMR.

Date: March 24, 2016

Inspected By:

Steve Brunner, Gary Coast

Item Inspected	Condition	Comments	
Channel Sections and Joints	Good / Poor	Check for cracks	Ok
Channel Inlet Connection @ KT	Good / Poor	Check for cracks	Ok
Channel Outlet/Pipeline Inlet	Good / Poor	Check for cracks	Ok
Channel Bottom (during low flows)	Good / Poor		Ok
Bottom Joints (during low flows)	Good / Poor		Ok
Trash Rack Assembly Rail Units	Good / Poor	Check for corrosion and bolt tightness	Ok
Trash Racks	Good / Poor	Removed debris from trash racks	
Parshall Flume	Good / Poor	Check fiberglass and joint connections	Ok

General Comments:

Bunker mine has one pump running at this time.

The Kellogg Tunnel flow at this time is 2.39 mgd (1660 gpm), pH at this time is 3.00

All flume components are in good shape at this time with the exception of the flume staff gauge.

Alternate hand held staff gauges will be utilized to verify flume staff gauge and flow meter readings.

Ultrasonic flow meter calibration was correct.

**Operators observed no mine activity at this time.**

## CTP Mine Water Line Open Channel Inspection Form

**Note:** This form should be utilized weekly during the regular channel cleanout.  
Results will be include with the Daily Quality Control Report and monthly DMR.

Date: March 31, 2016

Inspected By:

Steve Brunner, Gary Coast

Item Inspected	Condition	Comments	
Channel Sections and Joints	Good / Poor	Check for cracks	Ok
Channel Inlet Connection @ KT	Good / Poor	Check for cracks	Ok
Channel Outlet/Pipeline Inlet	Good / Poor	Check for cracks	Ok
Channel Bottom (during low flows)	Good / Poor		Ok
Bottom Joints (during low flows)	Good / Poor		Ok
Trash Rack Assembly Rail Units	Good / Poor	Check for corrosion and bolt tightness	Ok
Trash Racks	Good / Poor	Removed debris from trash racks	
Parshall Flume	Good / Poor	Check fiberglass and joint connections	Ok

General Comments:

Bunker mine has one pump running at this time.

The Kellogg Tunnel flow at this time is 2.36 mgd (1640 gpm), pH at this time is 2.95

All flume components are in good shape at this time with the exception of the flume staff gauge.

Alternate hand held staff gauges will be utilized to verify flume staff gauge and flow meter readings.

Ultrasonic flow meter calibration was correct.

**Operators observed no mine activity at this time.**



One Government Gulch - PO Box 929

Kellogg ID 83837-0929

(208) 784-1258

Fax (208) 783-0891

Ferguson Contracting 901 N. Division Pinehurst, ID 83850	Project: BHCTP	Sampled: 02-Mar-16
		Received: 02-Mar-16
		Reported: 03-Mar-16 13:23

LAB #	W6CD019-01	-	-	-	-	-
SAMPLE ID	006-03-02-16	-	-	-	-	-
Reporting Limit	03/02/2016 06:00	-	-	-	-	-

**Metals [Total] (Water)**

Cadmium	0.0100 mg/L	0.0036 [2]	-	-	-	-
Lead	0.0500 mg/L	<0.0025 [3]	-	-	-	-
Manganese	0.0200 mg/L	20.5	-	-	-	-
Zinc	0.020 mg/L	0.277	-	-	-	-

**Classical Chemistry Parameters (Water)**

pH	pH Units	7.04 [1]	-	-	-	-
Total Susp. Solids	mg/L	5.0 [2]	-	-	-	-

John Kern  
Laboratory Director



One Government Gulch - PO Box 929

Kellogg ID 83837-0529

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Ferguson Contracting  
901 N. Division  
Pinehurst, ID 83850

Project: BHCTP

Sampled: 03-Mar-16  
Received: 04-Mar-16  
Reported: 07-Mar-16 15:39

LAB #	W6C0080-01	W6C0080-02	-	-	-	-
SAMPLE ID	KT-03-03-16	CTP004-03-16	-	-	-	-
	03/03/2016 07:30	03/03/2016 07:50	-	-	-	-

## Metals (Total) (Water)

Cadmium	0.0100 mg/l	0.0778	0.0536	-	-	-
Lead	0.0500 mg/l	0.617	0.337	-	-	-
Manganese	0.0200 mg/l	69.7	-	-	-	-
Zinc	0.020 mg/l	66.5	0.833	-	-	-

## Classical Chemistry Parameters (Water)

pH	pH Units	3.36	-	-	-	-
Total Susp. Solids	mg/l	62.0	-	-	-	-

John Kern  
Laboratory Director



One Government Gulch - PO Box 929 Kellogg ID 83837-0929 (208) 784-1258 Fax (208) 783-0891

Ferguson Contracting 901 N. Division Pinehurst, ID 83850	Project: BHCTP	Sampled: 04-Mar-16
		Received: 04-Mar-16
		Reported: 07-Mar-16 15:38

LAB #	W6C0079-01	-	-	-	-	-
SAMPLE ID	006-03-04-16	-	-	-	-	-
	03/04/2016 06:00	-	-	-	-	-
<b>Metals (Total) (Water)</b>						
Cadmium	0.0100 mg/L	0.0078 [1]	-	-	-	-
Lead	0.0500 mg/L	<0.0025 [1]	-	-	-	-
Manganese	0.0200 mg/L	22.6	-	-	-	-
Zinc	0.020 mg/L	0.528	-	-	-	-
<b>Classical Chemistry Parameters (Water)</b>						
pH	pH Units	7.18	-	-	-	-
Total Susp. Solids	5.0 mg/L	0.6 [1]	-	-	-	-

John Kern  
Laboratory Director



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Ferguson Contracting 901 N. Division Pinehurst, ID 83850	Project: BHCTP	Sampled: 07-Mar-16
		Received: 07-Mar-16
		Reported: 08-Mar-16 14:45

LAB #	W6C0097-01	W6C0097-02	-	-	-	-
SAMPLE ID	006-03-07-16	KT-03-07-16	-	-	-	-
	03/07/2016 06:00	03/07/2016 07:35	-	-	-	-
<b>Reporting Limit</b>						
<b>Metals (Total) (Water)</b>						
Cadmium	0.0100 mg/L	0.0050 [3]	0.0820	-	-	-
Lead	0.0500 mg/L	<0.0025 [3]	0.626	-	-	-
Manganese	0.0200 mg/L	32.0 [4]	66.3	-	-	-
Zinc	0.020 mg/L	0.523	56.6 [1]	-	-	-
<b>Classical Chemistry Parameters (Water)</b>						
pH	pH Units	7.16 [2]	5.31 [2]	-	-	-
Total Susp. Solids	5.0 mg/L	1.2	73.0	-	-	-

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Laboratory Director



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Ferguson Contracting  
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Pinehurst, ID 83650

Project: BHCTP

Sampled: 09-Mar-16

Received: 09-Mar-16

Reported: 10-Mar-16 14:28

LAB #	W6CD142-01	-	-	-	-	-	-
SAMPLE ID	006-03-09-16	-	-	-	-	-	-
Reporting Unit	03/09/2016 06:00	-	-	-	-	-	-
<b>Metals (Total) (Water)</b>							
Cadmium	0.0100 mg/L	0.0055 [2]	-	-	-	-	-
Lead	0.0500 mg/L	<0.0025 [4]	-	-	-	-	-
Manganese	0.0200 mg/L	23.9 [3]	-	-	-	-	-
Zinc	0.020 mg/L	0.330	-	-	-	-	-
<b>Classical Chemistry Parameters (Water)</b>							
pH	pH Units	7.12 [1]	-	-	-	-	-
Total Susp. Solids	5.0 mg/L	1.0	-	-	-	-	-

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Ferguson Contracting  
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Pinehurst, ID 83650

Project: BHCTP

Sampled: 10-Mar-16

Received: 11-Mar-16

Reported: 15-Mar-16 11:46

LAB # SAMPLE ID	W6C0208-01	W6C0208-02	W6C0208-03	W6C0208-04	-	-
	KT-03-10-16	PTM-03-10-16	QC-03-10-16	CTPX-03-10-16	-	-
Reporting Unit	03/10/2016 07:30	03/10/2016 08:00	03/10/2016 08:00	03/10/2016 07:00	-	-
<b>Metals (Total) (Water)</b>						
Cadmium	0.0100 mg/L	0.0850	1.25	1.26	0.0530	-
Lead	0.0500 mg/L	0.642	0.0102 [3]	0.0096 [3]	0.381	-
Manganese	0.0200 mg/L	70.1	-	-	-	-
Zinc	0.020 mg/L	49.1 [1]	12.4	12.6	0.826	-
<b>Classical Chemistry Parameters (Water)</b>						
pH	pH Units	3.25 [2]	7.13 [2]	6.90 [2]	-	-
Total Susp. Solids	5.0 mg/L	71.0	<0.0 [4]	0.2 [3]	-	-

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Technical Director



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Pinehurst, ID 83650

Project: BHCTP

Sampled: 11-Mar-16

Received: 11-Mar-16

Reported: 14-Mar-16 15:16

LAB #	W6C0207-01	-	-	-	-	-	-
SAMPLE ID	006-03-11-16	-	-	-	-	-	-
Reporting Unit	03/11/2016 06:00	-	-	-	-	-	-
<b>Metals (Total) (Water)</b>							
Cadmium	0.0100 mg/L	0.0074 [2]	-	-	-	-	-
Lead	0.0500 mg/L	<0.0025 [4]	-	-	-	-	-
Manganese	0.0200 mg/L	13.2 [3]	-	-	-	-	-
Zinc	0.020 mg/L	0.310	-	-	-	-	-
<b>Classical Chemistry Parameters (Water)</b>							
pH	pH Units	6.88 [1]	-	-	-	-	-
Total Susp. Solids	5.0 mg/L	1.2	-	-	-	-	-

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Pinehurst, ID 83650

Project: BHCTP

Sampled: 14-Mar-16

Received: 14-Mar-16

Reported: 15-Mar-16 13:47

LAB #	W6C0231-01	-	-	-	-	-	-
SAMPLE ID	006-03-14-16	-	-	-	-	-	-
	03/14/2016 06:00	-	-	-	-	-	-
Reporting Unit							
<b>Metals (Total) (Water)</b>							
Cadmium	0.0100 mg/L	0.0049 [2]	-	-	-	-	-
Lead	0.0500 mg/L	<0.0025 [4]	-	-	-	-	-
Manganese	0.0200 mg/L	25.7	-	-	-	-	-
Zinc	0.020 mg/L	0.254	-	-	-	-	-
<b>Classical Chemistry Parameters (Water)</b>							
pH	pH Units	7.03 [1]	-	-	-	-	-
Total Susp. Solids	5.0 mg/L	1.0	-	-	-	-	-

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Pinehurst, ID 83650

Project: BHCTP

Sampled: 14-Mar-16

Received: 14-Mar-16

Reported: 15-Mar-16 13:46

LAB #	W6C0232-01	W6C0232-02	-	-	-	-	-
SAMPLE ID	KT-03-14-16	QC-03-14-16	-	-	-	-	-
Reporting Unit	03/14/2016 07:35	03/14/2016 07:35	-	-	-	-	-
<b>Metals (Total) (Water)</b>							
Cadmium	0.0100 mg/L	0.0938	0.0934	-	-	-	-
Lead	0.0500 mg/L	0.662	0.662	-	-	-	-
Manganese	0.0200 mg/L	68.4	67.7	-	-	-	-
Zinc	0.020 mg/L	50.7 [1]	53.5 [1]	-	-	-	-
<b>Classical Chemistry Parameters (Water)</b>							
pH	pH Units	3.26 [2]	3.28 [2]	-	-	-	-
Total Susp. Solids	5.0 mg/L	71.0	72.0	-	-	-	-

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Pinehurst, ID 83650

Project: BHCTP

Sampled: 17-Mar-16

Received: 18-Mar-16

Reported: 23-Mar-16 14:36

LAB #	W6C0344-01	W6C0344-02	-	-	-	-	-
SAMPLE ID	KT-03-17-16	CTP03-03-17-16	-	-	-	-	-
Reporting Unit	03/17/2016 07:30	03/17/2016 07:00	-	-	-	-	-
<b>Metals (Total) (Water)</b>							
Cadmium	0.0100 mg/L	0.175	0.0518	-	-	-	-
Lead	0.0500 mg/L	0.896	0.320	-	-	-	-
Manganese	0.0200 mg/L	26.3	-	-	-	-	-
Zinc	0.020 mg/L	90.4 [1]	0.828	-	-	-	-
<b>Classical Chemistry Parameters (Water)</b>							
pH	pH Units	2.93 [2]	-	-	-	-	-
Total Susp. Solids	5.0 mg/L	14.0	-	-	-	-	-

John Kern  
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Ferguson Contracting  
901 N. Division  
Pinehurst, ID 83650

Project: BHCTP

Sampled: 18-Mar-16

Received: 18-Mar-16

Reported: 21-Mar-16 14:32

LAB #	W6C0343-01	-	-	-	-	-	-
SAMPLE ID	006-03-18-16	-	-	-	-	-	-
Reporting Unit	03/18/2016 06:00	-	-	-	-	-	-
<b>Metals (Total) (Water)</b>							
Cadmium	0.0100 mg/L	0.0040 [2]	-	-	-	-	-
Lead	0.0500 mg/L	<0.0025 [4]	-	-	-	-	-
Manganese	0.0200 mg/L	21.1 [3]	-	-	-	-	-
Zinc	0.020 mg/L	0.263	-	-	-	-	-
<b>Classical Chemistry Parameters (Water)</b>							
pH	pH Units	7.08 [1]	-	-	-	-	-
Total Susp. Solids	5.0 mg/L	0.4 [2]	-	-	-	-	-

John Kern  
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Ferguson Contracting  
901 N. Division  
Pinehurst, ID 83650

Project: BHCTP

Sampled: 21-Mar-16

Received: 21-Mar-16

Reported: 22-Mar-16 15:08

LAB #	W6C0382-01	-	-	-	-	-	-
SAMPLE ID	006-03-21-16	-	-	-	-	-	-
	03/21/2016 06:00	-	-	-	-	-	-
Reporting Unit							
<b>Metals (Total) (Water)</b>							
Cadmium	0.0100 mg/L	0.0076 [2]	-	-	-	-	-
Lead	0.0500 mg/L	<0.0025 [3]	-	-	-	-	-
Manganese	0.0200 mg/L	16.2	-	-	-	-	-
Zinc	0.020 mg/L	0.272	-	-	-	-	-
<b>Classical Chemistry Parameters (Water)</b>							
pH	pH Units	7.17 [1]	-	-	-	-	-
Total Susp. Solids	5.0 mg/L	0.8 [2]	-	-	-	-	-

John Kern  
Laboratory Director



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Ferguson Contracting  
901 N. Division  
Pinehurst, ID 83650

Project: BHCTP

Sampled: 21-Mar-16

Received: 21-Mar-16

Reported: 24-Mar-16 14:56

LAB #	W6C0384-01	-	-	-	-	-	-
SAMPLE ID	KT-03-21-16	-	-	-	-	-	-
	03/21/2016 07:35	-	-	-	-	-	-
Reporting Unit							
<b>Metals (Total) (Water)</b>							
Cadmium	0.0100 mg/L	0.119	-	-	-	-	-
Lead	0.0500 mg/L	0.680	-	-	-	-	-
Manganese	0.0200 mg/L	78.8 [4]	-	-	-	-	-
Zinc	0.020 mg/L	52.2 [1] [4]	-	-	-	-	-
<b>Classical Chemistry Parameters (Water)</b>							
pH	pH Units	3.10 [2]	-	-	-	-	-
Total Susp. Solids	mg/L	84.0	-	-	-	-	-

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Project: BHCTP

Sampled: 23-Mar-16

Received: 23-Mar-16

Reported: 24-Mar-16 14:32

LAB #	W6CD417-01	-	-	-	-	-	-
SAMPLE ID	006-03-23-16	-	-	-	-	-	-
	03/23/2016 06:00	-	-	-	-	-	-
Reporting Unit							
<b>Metals (Total) (Water)</b>							
Cadmium	0.0100 mg/L	0.0058 [2]	-	-	-	-	-
Lead	0.0500 mg/L	<0.0025 [4]	-	-	-	-	-
Manganese	0.0200 mg/L	24.7 [3]	-	-	-	-	-
Zinc	0.020 mg/L	0.286	-	-	-	-	-
<b>Classical Chemistry Parameters (Water)</b>							
pH	pH Units	7.03 [1]	-	-	-	-	-
Total Susp. Solids	5.0 mg/L	0.6 [2]	-	-	-	-	-

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Project: BHCTP

Sampled: 24-Mar-16 to 25-Mar-16

Received: 25-Mar-16

Reported: 29-Mar-16 13:16

LAB # SAMPLE ID	W6CD479-01	W6CD479-02	W6CD479-03	W6CD479-04	W6CD479-05	-
	KT-03-24-16	PTM-03-24-16	CTPX01-03-24-16	RB-03-25-16	TB-03-25-16	-
Reporting Unit	03/24/2016 07:30	03/24/2016 07:30	03/24/2016 07:00	03/25/2016 06:00	03/25/2016 06:00	-
<b>Metals (Total) (Water)</b>						
Cadmium	0.0100 mg/L	0.115	1.31	0.0572	<0.0009 [4]	<0.0009 [4]
Lead	0.0500 mg/L	0.650	0.0118 [3]	0.344	<0.0025 [4]	<0.0025 [4]
Manganese	0.0200 mg/L	73.0	-	-	-	-
Zinc	0.020 mg/L	44.1 [1]	12.8	0.878	<0.004 [4]	<0.004 [4]
<b>Classical Chemistry Parameters (Water)</b>						
pH	pH Units	3.08 [2]	6.96 [2]	-	-	-
Total Susp. Solids	5.0 mg/L	82.0	0.2 [3]	-	-	-

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Project: BHCTP

Sampled: 25-Mar-16

Received: 25-Mar-16

Reported: 26-Mar-16 15:46

LAB #	W6CD478-01	W6CD478-02	-	-	-	-
SAMPLE ID	006-03-25-16	QC-03-25-16	-	-	-	-
Reporting Unit	03/25/2016 06:00	03/25/2016 06:00	-	-	-	-
<b>Metals (Total) (Water)</b>						
Cadmium	0.0100 mg/L	0.0075 [2]	0.0078 [2]	-	-	-
Lead	0.0500 mg/L	<0.0025 [4]	<0.0025 [4]	-	-	-
Manganese	0.0200 mg/L	16.4 [3]	16.5	-	-	-
Zinc	0.020 mg/L	0.311	0.310	-	-	-
<b>Classical Chemistry Parameters (Water)</b>						
pH	pH Units	6.31 [1]	6.32 [1]	-	-	-
Total Susp. Solids	5.0 mg/L	0.6 [2]	1.2	-	-	-

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Project: BHCTP

Sampled: 28-Mar-16

Received: 28-Mar-16

Reported: 29-Mar-16 14:33

LAB #	W6C0500-01	-	-	-	-	-	-
SAMPLE ID	KT-03-28-16	-	-	-	-	-	-
	03/28/2016 07:55	-	-	-	-	-	-
Reporting Unit							
<b>Metals (Total) (Water)</b>							
Cadmium	0.0100 mg/L	0.227	-	-	-	-	-
Lead	0.0500 mg/L	0.901	-	-	-	-	-
Manganese	0.0200 mg/L	32.3 [4]	-	-	-	-	-
Zinc	0.020 mg/L	98.3 [1] [4]	-	-	-	-	-
<b>Classical Chemistry Parameters (Water)</b>							
pH	pH Units	2.85 [2]	-	-	-	-	-
Total Susp. Solids	mg/L	5.0	16.0	-	-	-	-

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901 N. Division  
Pinehurst, ID 83650

Project: BHCTP

Sampled: 28-Mar-16

Received: 28-Mar-16

Reported: 29-Mar-16 14:32

LAB #	W6CD499-01	-	-	-	-	-	-
SAMPLE ID	006-03-28-16	-	-	-	-	-	-
Reporting Unit	03/28/2016 06:00	-	-	-	-	-	-
<b>Metals (Total) (Water)</b>							
Cadmium	0.0100 mg/L	0.0062 [2]	-	-	-	-	-
Lead	0.0500 mg/L	<0.0025 [5]	-	-	-	-	-
Manganese	0.0200 mg/L	27.0 [3]	-	-	-	-	-
Zinc	0.020 mg/L	0.326	-	-	-	-	-
<b>Classical Chemistry Parameters (Water)</b>							
pH	pH Units	7.06 [1] [4]	-	-	-	-	-
Total Susp. Solids	5.0 mg/L	0.8 [2]	-	-	-	-	-

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Ferguson Contracting  
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Project: BHCTP

Sampled: 30-Mar-16

Received: 30-Mar-16

Reported: 31-Mar-16 10:11

LAB #	W6C0530-01	-	-	-	-	-	-
SAMPLE ID	006-03-30-16	-	-	-	-	-	-
Reporting Unit	03/30/2016 06:00	-	-	-	-	-	-
<b>Metals (Total) (Water)</b>							
Cadmium	0.0100 mg/L	0.0075 [2]	-	-	-	-	-
Lead	0.0500 mg/L	<0.0025 [4]	-	-	-	-	-
Manganese	0.0200 mg/L	12.3	-	-	-	-	-
Zinc	0.020 mg/L	0.402	-	-	-	-	-
<b>Classical Chemistry Parameters (Water)</b>							
pH	pH Units	7.13 [1] [3]	-	-	-	-	-
Total Susp. Solids	5.0 mg/L	0.4 [2]	-	-	-	-	-

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Ferguson Contracting 901 N. Division Pinehurst, ID 83850	Project: BHCTP	Sampled: 31-Mar-16
		Received: 01-Apr-16
		Reported: 04-Apr-16 14:37

LAB #	W6D0002-01	W6D0002-02	-	-	-	-
SAMPLE ID	KT-03-31-16	CTPX04-03-31-16	-	-	-	-
Reporting Limit	03/31/2016 07:30	03/31/2016 07:00	-	-	-	-
<b>Metals (Total) (Water)</b>						
Cadmium	0.0100 mg/L	0.121	0.0544	-	-	-
Lead	0.0500 mg/L	0.617	0.354	-	-	-
Manganese	0.0200 mg/L	75.0	-	-	-	-
Zinc	0.020 mg/L	62.0 [1]	0.847	-	-	-
<b>Classical Chemistry Parameters (Water)</b>						
pH	pH Units	3.09 [2]	-	-	-	-
Total Susp. Solids	5.0 mg/L	92.0	-	-	-	-

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1891